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Journal of the Society of Arts.

FRIDAY, JANUARY 29, 1869.

Announcements by the Council.

Ordinary Meetings.

Wednesday Evenings at eight o'clock:—

February 3.—"On the Useful Application of Waste Products and Undeveloped Substances." By P. L. Simmonds, Esq.

February 10.—

February 17.—"On the Efficiency and Economy of a National Army in Connection with the Industry and Education of the People." By Henry Cole, Esq., C.B. On this evening the Right Hon. T. Milner Gibson will take the chair.

Cantor Lectures.

The Second Course of Cantor Lectures for the present Session will be "On Painting," by S. A. Hart, Esq., R.A., late Professor of Painting at the Royal Academy, and will consist of Four Lectures, to be delivered as follows:—

Lecture I.—Monday, February 1st.

On the History of Portrait Painting.

Lecture II.—Monday, February 8th.

On the Practice of Portrait Painting.

Lecture III.—Monday, February 15th.

On the Suggestions offered by surrounding circumstances to the Artist.

Lecture IV.—Monday, February 22nd.

On Landscape Painting.

Each lecture will begin at eight o'clock. These Lectures are open to Members, each of whom has the privilege of introducing two friends to each Lecture. Tickets for this purpose were forwarded with last week's *Journal.*

FINAL EXAMINATIONS, 1869.

In order to avoid holding these Examinations on the same evenings as those of the Department of Science and Art, it has been decided to hold them, in 1869, on the evenings of

TUESDAY, the 20th APRIL,
WEDNESDAY, the 21st "
THURSDAY, the 22nd "
FRIDAY, the 23rd "

From 7 p.m. to 10 p.m., instead of on the 27th, 28th, 29th, and 30th April, as announced in the Programme of Examinations for 1869.

In consequence of this alteration the Previous Examinations must be held earlier, and the Forms No. 2 and No. 4, referred to in par. 6 of the Programme, must of course be sent in a week earlier than the dates there fixed for receiving them.

It is very important that this alteration should be made as public as possible. For this purpose a number of small slips, to be inserted between pages 8 and 9 of every Programme sent out, have been forwarded to each Institution and Local Board. Large bills, to be suspended on the walls of the Institution reading-room, or in some other public place, will also be sent on application.

In reference to the subjects referred to in the notice at page 9 of the Programme, a sufficient number of applications from candidates in Conic Sections have already been received. A paper will therefore be set in that subject.

Candidates desiring to be examined in Navigation and Nautical Astronomy, Mining and Metallurgy, and Italian, should communicate their wishes without delay.

Elementary Examinations, 1869.

Secretaries of District Unions and Local Boards desiring to adopt the Society's scheme of Elementary Examinations, are reminded that they must apply to the Secretary of the Society of Arts before the 10th of February, stating the number of male and female Candidates respectively desiring to be examined in each grade.

Committee on India.

The Council have resolved that a Committee be formed "to organize meetings for the discussion of subjects connected with the Arts, Manufactures, and Commerce of our Indian Empire."

The following gentlemen have been already invited to serve on this Committee:—

Archibald Campbell.
George Campbell.
Edwin Chadwick, C.B., Member of Council of Society of Arts.
Hyde Clarke, Member of Council of Society of Arts.
Sir Daniel Cooper, Bart., Member of Council of Society of Arts.
Sir William Denison.
Maj.-Gen. Sir Vincent Eyre, C.B., Member of Council of Society of Arts.
C. H. Fielder.
W. S. Fitzwilliam.
George Moffatt.
Sir Robert Montgomery, K.C.B., Vice-President of the Society of Arts.
Colonel Sykes, M.P.
Captain Edward Thackeray.
Sir Charles Trevelyan, K.C.B.
Dr. J. Forbes Watson.

In addition to these gentlemen, the East India Association has been requested to nominate three of its members to join the Committee.

The Secretary of the Society of Arts will be glad to receive the names of any members of the Society taking an interest in Indian questions, in order that they may be invited to attend the meetings above referred to.

Subscriptions.

The Christmas subscriptions are due, and should be forwarded by cheque or Post-office order, crossed "Coutts and Co.," and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of the Society.

Eighth Ordinary Meeting.

Wednesday, January 27th, 1869; George Godwin, Esq., F.R.S., in the chair.

The following candidates were proposed for election as members of the Society:—

Cow, Peter B., jun., Streatham-common, S.W.
Firbank, Ralph, 4, Rockhall-terrace, Cricklewood, N.W.

The following candidates were balloted for, and duly elected members of the Society:—

Bate, John, 16, Northumberland-street, Strand, W.C.
Falcke, Philip, 23, Bedford-square, W.C.
Learmonth, Dr., Clapham-park, S.W.
Smith, Frederick, 23, York-street, Lambeth, S.E.

The Paper read was—

ON XYLOGRAPHY, OR PRINTING AND GRAINING FROM THE NATURAL SURFACES OF WOODS.

By William Dean, Esq., Sen.

The subject which it is my privilege to bring under the notice of your Society this evening, is a process for taking impressions from the grain of wood, and transferring those impressions on to other surfaces, and has been called "nature printing."

Before entering on a description of this process, will you pardon me for making a few remarks of a somewhat personal character. This I should not have presumed to do, but, in submitting my specimens to Mr. Foster, your excellent and courteous secretary, in the conversation which followed, some of the incidents which I am about to refer to were mentioned, and he suggested that I should refer to them in my paper, feeling assured that you would be gratified to hear them, connected as they are with the operations of two such eminent men as the late Mr. Herbert Minton, the distinguished potter and encaustic tile manufacturer, and the late Mr. Charles Hullmandel, the father of lithography in this country. The facts will, I think, be all the more acceptable to you, inasmuch as they have never yet been made public.

I think it was about the year 1833 when the late Mr. Minton added to his other large operations that of making encaustic tiles. From the first it was felt that pattern sheets of the tiles—which in those days were all of one size, six inches square—would have to be printed, to send to architects and others, for the purpose of illustration. These were printed from wood blocks, the size of the tiles, and were engraved, I believe, by Mr. Barr, of Birmingham. They were printed on buff paper, which represented the groundwork of the tiles, in red and black, which represented the ornament, these being the only colours then in use. The practical inconvenience of patterns of this size will be obvious, and so it was felt at the manufactory, and Mr. Minton decided to reduce the size of the patterns, and to have them printed from stone, under his own superintendence. But at that point he met with this difficulty, there was not a lithographer in the county. With his accustomed energy and promptness, he determined that he would have a lithographic press in his own town; and, in the arrangements which were made to carry out that decision, it so happened that I was selected to go to London, to learn the lithographic printing, and, early in 1835, I entered the establishment of Mr. Hullmandel, of Great Marlborough-street, as a pupil. After a residence of some months in London, I returned to Staffordshire and commenced operations. In working out these pattern sheets for Mr. Minton, I received valuable aid from Mr. Hullmandel, and I remember well, when Mr. Minton introduced the deep blue on buff ground on the tiles, the difficulties I had to contend with in printing blue on buff paper, for as you are all aware, no doubt, the result was buff and green, and not buff and blue. Trials almost without end were made. I was greatly perplexed, and Mr. Minton became very impatient, for it so happened that he was engaged in getting up a design for the floor of a church for the Marchioness of Lothian, in which tiles with a blue ornament on a buff ground were introduced, and we were within three days of the date when the design had to be forwarded. In a state almost of desperation, and while casting about for help, in a happy moment I thought of Mr. Hullmandel, and decided to write to him by that night's post, in the hope that he might possibly help me through the difficulty. The return post from London was due on the day the design had to be forwarded; the morning came, and with it a letter from Mr. Hullmandel. It was very brief, but very characteristic of the man, and was as follows:—

> "Dear Sir,—Print in varnish, and dust with dry colour. "Yours truly,
> "C. Hullmandel."

I need scarcely say that the design was forwarded in time, greatly to the delight of Mr. Minton. To some present this may seem strange enough, but it must be borne in mind that, at the time I am speaking of, chromolithography was not introduced, but, even then, lithographers in London, and some in the country, were steadily working in that direction, and you all know what wonderful results have since been achieved.

During my pupilage with Mr. Hullmandel, in a conversation I had with him on the Staffordshire Potteries, he remarked that he thought it possible to decorate earthenware by impressions taken from stone instead of from copper. I arranged for the requisite materials, and he prepared for a series of experiments. For about two months he bent the energy of his great mind to the task; package after package of biscuit earthenware was forwarded from Stoke-upon-Trent, decorated, sent back, glazed, fired, and returned to town, each package more successful than the preceding one. When the last package arrived, Mr. Hullmandel sent for me into his private office, where the articles were spread out, and he inquired what I thought of them. I told him I considered them very successful. "Yes," said he, "in one sense they are;" and he added, "but in all these processes there are two questions to be answered: the first is—Have we succeeded? That can be answered in the affirmative. The second is—Will it supersede the present method? The answer to that is, No. So you perceive that the process breaks down commercially." Thanking me for the help I had given him, he said, "As far as I am concerned, nothing more will be heard of it." Some four years later, Mr. Ducote took out a patent for the same process. He spent probably not less than two years in the Potteries, making experiments, and, after a great expenditure of time and money, it broke down, precisely as Mr. Hullmandel had predicted. Some two or three years subsequently to this period, Mr. Hullmandel took out a patent in connection with the manufactures of the Potteries, of an entirely different character, and two of the largest houses in the district were licensed to use it; that failed, but in my judgment not on its merits, but from causes which have wrought ruin to many an inventor—want of a fair trial. But here I must forbear. I may, however, remark, in closing these observations, I feel that, in my own case, the old points—quality and cost—will have to be fully looked at, and frankly dealt with, and I would fain hope that the result of the investigation may be alike satisfactory to myself and my audience.

Apologising for detaining you so long from the consideration of the questions which have more immediately brought us together, I proceed to remark that, in showing my own patented process in different places, I have often heard it observed, "How very remarkable it is that this has never before been discovered," and indeed in that light I myself regard it, especially when I reflect on the fact that pieces of oak, such as I now hold in my hand, called by letter-press printers "reglet," have been in use by them for, I should say, at least a century, and probably for a much longer period, and that there never occurred to the thousands of masters and workmen, who, during that period, must have seen imprinted the veining of those reglets, the idea of turning the fact to practical account, and giving to it a commercial value. Yet such appears to be the case.

Before I enter on a detailed description of the process, I will glance at the range of the process, and point out those branches of industry to which it is specially applicable. These are as follows:—for transferring impressions from wood to plain deal, or to painted surfaces, either flat or moulded, in buildings of all descriptions, where an accurate transcript of the more costly woods is desired, and for house and bedroom furniture generally; for japanned goods, made in metal or papier maché; for enamelled parqueterie tiles, and for articles in earthenware, such as garden seats, oyster and flower tubs, spirit casks, flower-pots, tea-urn stands, &c.; for enamelled slate, for paperhangings, and for oil cloths.

Having thus briefly indicated the nature of the process, and the range of its application, I proceed to state the methods by which these results are arrived at. Select a piece of wood of fine quality about five feet long, twelve inches wide, and a quarter of an inch thick; it is, to use the technical phrase, cleaned up by the cabinet-maker on both sides, and is well sand-papered down. By having both sides of the board cleaned up, two patterns are obtained from the same board. A chemical preparation is then applied to it, which has the effect of opening the pores of the wood, and, at the same time, of hardening the surface, and, when the board is thoroughly dry, it is ready for use, and is, in fact, a wood-plate, "not graven by art or man's device," but by the Great Designer and Architect of the Universe, whose works, the most stupendous as well as the most minute, are all perfect. The material used for taking the impression is prepared in oil, and is specially adapted for the purposes of transferring. The paper, too, is manufactured for the purpose, is very thin but tough, so that it can be successfully applied to any irregular or moulded surfaces, and it is sized to prevent the colour from becoming incorporated with the body of the paper. A small wood roller is used for spreading the colour on the board, and a large, broad, flexible palette-knife is used for taking the superfluous colour off. That being done, the sized paper is placed on the board, and both are passed through a small machine having turned-iron cylinders, the upper one being covered with double-milled flannel; the paper is then taken off the board, its printed surface is applied to the article to be decorated, the back of the impression is lightly rubbed with a piece of soft flannel, the paper is removed, and an exact *fac-simile* of the board from which the impression is taken is given. But that is not all, for a second and a third transfer are frequently obtained from the same piece of paper, and sometimes a fourth, a fifth, and a sixth. This is one of the remarkable features of the process, and, as you will not fail to perceive, must have a very marked influence on the rapidity of its application, and, consequently, on its cheapness. The thought may occur to the minds of some present, "but in taking off the impressions does not the board get foul, and the pores of the wood clogged up?" The thought is a natural one. My answer is, that with the colour properly prepared, and adapted for its purpose it does not, any more than does the plate of the copper and steel plate printer; but such a result would occur in both cases if the material used was not suitable for its purpose. When a board has been used it is treated as all other plates are, a cheap material is used for dissolving the printing colour, a handful of fine sawdust is then rubbed over it, which most effectually draws out of the pores of the wood the dissolved colour, and leaves the board clean, and ready for further use when required. Another question may arise in some minds, "but what about the durability of the boards?" The answer to that question may, at first sight, appear startling, but I am satisfied it is correct. The fact is that, under the same conditions, provided no accident happen to it, the board will be far more durable than either the copper or steel plate. I have arrived at that conclusion, not only from close observation, but from actual experience, for it is a fact that there are boards at Messrs. Thomas Simmons and Son's, Manchester, at Messrs. Minton and Co.'s, Stoke-upon-Trent, and at the carriage works of the North Staffordshire Railway Company, which have been in something like regular use for nearly three years, and my conviction is that they are in as good a working state at the present time as they were the day they were first used. Nay, more; I believe that some boards, with careful and constant use, improve rather than deteriorate.

There is one other point I will allude to before passing to the other important branch of the subject, and that is with respect to variety of pattern. That question has sometimes met me in a very blunt form. I have been told that there would be either great sameness in the work, or I must take a timber-yard with me. My answer to this is, not necessarily either the one or the other. For example, I take a board of the size already named (5ft. long and 12in. wide), this I use on both sides, and from one such board I obtain 10ft. superficial variety of pattern, and in applying the impressions it does not follow that they should all be applied precisely in the same way; so that half-a-dozen boards of the size named would give 60ft. superficial of variety of pattern, and that variety would be trebled by judicious application, and would give ample variety for the largest room in a nobleman's mansion. But there is no necessity to limit the number, if greater variety is desired, the boards being cheap enough, only costing about half a-crown each.

The second division of the subject, and the one to which I shall now direct your attention, is the important one of quality and cost. In dealing with them, instead of giving my own opinion, I shall give that of others—persons of refinement and taste, and of large practical experience. Of the quality of the work you will be able to judge from the specimens it is my privilege to submit to you; and this, perhaps, may be a fitting time to make the statement, that I have had specimens at three industrial exhibitions; at two of them I was specially requested to meet the adjudicators of the prizes to explain the process to them, so as to enable them to form an opinion as to whether the patent possessed any commercial value, and in all three cases I was awarded either a prize or a certificate of merit.

I have taken considerable pains to bring my specimens and process under the notice of architects, both in London and in the provinces; in some cases an audience has been denied me, by some I have been told plainly enough that they hate all imitations, but by others I have met with a very courteous and, sometimes, a flattering reception. I will content myself with giving three illustrations in connection with architects; one of a large building firm in your own city, and two of practical grainers of eminence, one in London and the other in Manchester.

Messrs. Thomas Simmons and Son, builders and decorators, of Manchester, were among the first to adopt my process, and, after three years' experience of its practical value, have arranged with me for an exclusive license for the city of Manchester and Salford. Shortly after they introduced it they were employed to erect a mansion for a gentleman who had seen my specimens, and who wished to have the graining done by this process. The architect objected to it, but the proprietor persisted and carried the point. When the mansion was completed, the architect, the proprietor, the builder, and the patentee met to look over the work. After the inspection, I took the architect to the entrance-hall, to a point where the imitation was worked up to the solid oak, and where we had a good view of both; and, while looking at the work from that point, I asked the architect whether he thought there was more than one person in a hundred who would be able to say where the solid ended and the imitation commenced. He replied very frankly that he thought there was not. I replied, that being so, I thought my process ought to have fair play, and it ought not summarily to be put out of court. He said he quite agreed with me, and that it had worked out much better than he thought it would do. You will readily imagine that I was perfectly satisfied with the result. I had fought the battle of imitation and won. The next illustration I shall cite took place in one of our largest provincial towns. The architect has attained to considerable eminence in his profession, and the case afforded me some amusement. After a careful examination of my specimens, and listening to what I had to say in their favour, he called his chief assistant, and pointing to the specimens, asked him what he thought those were. He replied very promptly and emphatically, "I suppose, sir, you will call them shams." His reply was, "No I shall not, these are not shams, they are a transcript from the wood itself, and, therefore, must be both true and natural." Before we separated, he thanked me for bringing the subject under his notice. The last professional illustration has reference to Mr. Robson, the Corporation Architect, of Liverpool. In that town new public offices have been erected, and about two years ago the question arose as to what material and design should be adopted for decorating the dados in the corridors and staircases. After mature deliberation, and having had several specimens put in position, Mr. Robson decided to apply the enamelled parqueterie tiles manufactured by Messrs. Minton and Company, as licensees under my patent. When the work was finished, Mr. Robson expressed his opinion that the parqueterie tiles had worked out very much to his satisfaction.

The building firm whose opinion of the quality of my specimens I shall now have the pleasure to quote, is among the most famous in your city; I allude to the builders of the new Foreign Offices, Messrs. George Smith and Co., of South-street. Judging from the solid oak work inside that building, I may safely say, that if any persons in the kingdom are competent judges of quality of work, they are; and I esteem the opinion expressed by Mr. Taylor, of that firm, of the utmost value to me. While Mr. Taylor was examining my specimens, Mr. Smith, jun., of that firm, came into his office. Mr. Taylor, after directing his attention to them, remarked, "This is what we are got to now; we cannot tell the solid from the imitation of it. I think I know as much about wainscoating as most men, and I defy any man to tell these specimens from solid wood." It is gratifying to me to be able to give two illustrations of practical grainers, inasmuch as that class is the most sensitive on the subject. The first is that of Mr. Mannooch, a name well known in London to the trade, and any opinion of his on the subject of graining, I am happy to know, is received with great respect. In showing my specimens to him, he remarked that he should like to see the process applied; and, as he was erecting a house at St. John's-wood, it was arranged that I should grain the drawing-room oak. The question of price per yard was left to him. When the work was completed and varnished, he told me he should pay me 2s. per yard for it—which was double what I expected; that if he had known of it 30 years ago, he could have made a fortune out of it; and that I might with pleasure use him as my London referee. The other illustration is that of Mr. Bardsley, of Manchester—perhaps as good a grainer as is to be found out of London. I showed the process in Manchester to four gentlemen, of whom Mr. Bardsley was one. The article decorated was a piece of furniture. When I had finished, Mr. Bardsley said that I had done as much work in ten minutes as he could do in a day, to do it of the same quality. One of the other gentlemen replied, "Mr. Bardsley, you could not do it of the same quality as that if you did take a day to do it." Mr. Bardsley smilingly said, "Well, perhaps I could not;" and added, "the simplicity of the process has taken me more by surprise than the quality of the work."

It would be easy to multiply illustrations, but I fear that I have already trespassed at too great length on your patience, and I must hasten on to deal with the question of cost, although you will not have failed to perceive that my last illustration touches both quality and cost.

I shall deal with the question of cost as I have dealt with the question of quality, and point out what has been done under the patent in a given time. I may, however, remark here that there are plenty of painters, in London and the country, who say that they can get graining done at 5d. and 6d. per yard. I do not deny the statement, for I heard one gentleman say that the men who did his graining got through a great deal of work, for they did it with whitewash brushes, and, for aught he knew (or perhaps cared), it answered as well as if it were more costly. There are others, however, who are candid enough to admit that, for good oak-graining, they have often to pay 2s. and 2s. 6d. per yard. Among the latter I have pleasure in mentioning Mr. Foxley, of London. I have it on the authority of Mr. Crossley, of Newark, that he paid to a London grainer £50 for graining 50 doors for him, in a house he was decorating in the metropolis for, I believe, a Nottinghamshire gentleman; but Mr. Crossley declined to affirm that the hand-graining he paid so high a price for was equal in quality to my specimens.

A painter in Burslem was anxious to see some work done by the process in his own house; a man and boy were sent over to do some, and they grained two six-panelled doors in twenty minutes by the clock. The wife of the painter told me she watched the clock with the special object of ascertaining how long it took to do them. The same man and boy grained an octagon pulpit for another painter, about three miles from Burslem, in an hour and twenty minutes. Both these painters purchased licenses. When Messrs. Simmons and Son, of Manchester, purchased a second machine, I gave one of their men instructions in working the process, and, after three days' practice, I asked him about the quantity of work he could do as compared with hand graining, and he informed me that he was quite sure he could do one-third more than by hand, and much more easily and pleasantly to himself. At the North Staffordshire Railway Company's works, when giving instruction to their foreman, I myself grained ten square yards of imitation East India teak in two hours by the watch, and this was done in the same compartments with solid teak, and had to match it. I had a young man to assist me, such as the hand grainer has to rub his colour in for him.

Perhaps, after all, the most conclusive illustration of success in price is supplied by its application to japanned goods. You are all probably aware that the graining on that class of goods is of the commonest kind. In Wolverhampton, I was told by the leading manufacturers that successful competition in price with hand graining on their goods was out of the question. From that conclusion, however, I dissented, and I told them so. From Wolverhampton I went to Birmingham. There I met a gentleman from London, unconnected with the japanning trade, who bought the exclusive licence for that class of goods as a speculation, and he re-sold it in less than a week to Messrs. Hopkins and Sons, of Granville-street, for a price which left him a very handsome profit. I need not hesitate to affirm that if the process will compete successfully in price with hand graining on japanned goods, it will compete in price with any class of goods; and Messrs. Hopkins and Sons would not have given the price they did for an exclusive license if they had not satisfied themselves on that point. Fourteen months ago I supplied them with one machine and set them to work, and in about six months after they wrote to me to forward them two more machines.

The question of durability has been raised, and properly so, as that is a point of great importance to the public. To enable you to judge, I may say that the hand-grainer works in distemper, I in oil colours, and it resolves itself into the old question, which is the more durable, water colours, or oil colours? After all, the test of experience is the most conclusive and satisfactory; and here again I must refer to my specimens, as the large one has been done more than three years, and has had a good deal of knocking about at exhibitions, and travelling through the country. If a good sound varnish is used I have no hesitation in saying that the work will be very durable, and much more so than work done by hand.

In applying the subject to the exigencies of our condition as a commercial country, shall I be far from the truth if I hazard the remark that in this department of our operations there is great room for improvement? I am supported in this view by what occurred in a conversation I had with an architect in the provinces. Substantially, it was as follows:—I said to him, "The painters and decorators tell me that graining is going out; that architects will not have it, and are either staining the plain deal, or using parti-colours instead in their decorations." He replied, "To some extent that is true, and the chief reason is, not so much that they object to graining in the abstract, as that they object to the kind of graining they have done for them. They would only be too delighted to have it done as good as your samples, for these are beautiful and true to nature." Now, God has implanted in the human mind a love of the beautiful and the true; hence the merchant hastens away, and, amid the beauties of nature, forgets for the time the cares and anxieties of the counting-house and the exchange, and the artisan the toils of the workshop; each rejoices in beholding the loveliness of the landscape, and contemplates with delight the gorgeous and varied verdure of the trees, but how few there are who reflect and ponder on the marvellous internal structure of those trees which grow in our woods and hedgerows, so full of elaborate ornament, feathered, flowered, striated, and dotted, in patterns of perfect, and sometimes of complex beauty, to an extent that no graving done with the graver's tool can equal in gracefulness of design or in strength and delicacy of touch. Hitherto these patterns of wondrous beauty have been imitated by the cunning hand of man with his pencil or his graver; but this process will inaugurate a new era, and these exquisitely beautiful patterns will be re-produced in almost endless variety. The letter-press printer re-produces old and scarce books, and the chromo-lithographer re-produces rare and costly pictures, and this at a price that places them within the reach and means of the general public. So this process is designed to make accessible to the community in general copies of the more than artistic beauties of a part, though it be but a small part, of the glorious works of God. I flatter myself that I can, even at this early stage of the process, produce as fine a copy of a choice piece of Baltic billet oak, as the chromo-lithographer can produce of Stanfield's "Venice," Turner's "Polyphemus," or any other fine work of Art.

In conclusion, will you permit me to say that in dealing with the subject under consideration, I have, to a large extent, kept my own opinion of its merits in abeyance; I have asserted little with respect to it, feeling that any statements of mine in that direction would be considered as *ex-parte*, but I have deemed it the more prudent, as it must be the more satisfactory course to you, to let my specimens speak for me, and then to give you the opinions of others with respect to the process, and *those* not of partisans or friends, but mainly of persons whose first feelings in regard to it were not favourable, but whose views were entirely changed when they saw it worked out. I have told you not so much what can be done by it, as what has been done, and it still holds true that "what has been done can be done again." It is no mere theory that I have brought under your notice, but a process which has for the last four years been subjected to the sharp and searching test of experience, and such is the confidence Messrs. Simmons and Son have in its quality and capabilities, after three years' experience, that they have authorised me to say that they are open to undertake contracts for this class of work in any part of the kingdom, not excepting London, and so great is the interest they take in its success, that nothing but the sternest necessity has prevented Mr. William Simmons from being present this evening. A better testimony to its practical value it would be difficult for me to give you. To that firm I have great pleasure in thus publicly expressing my indebtedness, for they not only lent me a helping hand when help was of more value to me than it is to-day, but they readily permitted me to refer to them, and gave themselves the additional trouble of taking persons in the trade from other towns to see the work they had done under the patent. I feel myself also greatly indebted to Messrs. Minton and Co., Stoke-upon-Trent, and to Mr. James Johnson, Engineer, and Mr. J. B. Mellor, carriage superintendent of the North Staffordshire Railway Company, all of whom were so satisfied with the results of the process, that they very kindly permit me to refer to them.

DISCUSSION.

The CHAIRMAN remarked that the mention which had been made of Mr. Herbert Minton and Mr. Hullmandel must have brought to the minds of many present the idea of what immense progress had been made within the last thirty or thirty-five years in many of the useful arts. At the period alluded to in the paper chromolithographs were unknown, at least in England, and encaustic tiles were not in use, whilst the large trade in both these articles was now patent to everybody. Still, there was much room for further development, especially in the matter of encaustic tiles, which were, he had almost said, shamefully expensive in many cases, and were the price reduced there could be no doubt but that their use would be largely increased. These things, however, were not the only matters in which great progress had been made during the period he had named, and, although their native land was often spoken of as Old England, she might be regarded as still in her youth, so far as progress was concerned. They had *only had* a Royal Academy for about a hundred years, and steam-engines, railways, and the electric telegraph had been introduced within the memory of most persons present. Coming more immediately to the subject of the evening, he must beg leave to take exception to the name that had been given to the process described, for "xylography" meant wood engraving, as any dictionary would show. He had no great love for graining himself, although he did not go quite the length of some who abominated all shams. Graining, under some circumstances, was no doubt defensible, but the inexcusable character of some shams which had been put forward had had the effect of inducing many men who were anxious to associate architecture only with what was noble and honest, to set their faces against all imitations whatever.

Putting aside that consideration, and looking at the matter commercially, it appeared to him that this new process had many advantages, not the least of which was that it would have, he hoped, the effect of banishing that wretched apology for graining which sometimes was seen disfiguring and disgracing people's houses. He should like to hear from Mr. Dean whether the harder woods could be imitated in this manner, as the majority of the specimens appeared to be oak; and he was not certain whether mahogany, rosewood, and the harder woods could be imitated. He should also like to know whether the paper from which the impression was produced must be taken from the original on the spot, or whether it could be taken by workmen at a distance; and he did not understand whether the specified times within which a given quantity of work had been done included the printing of the paper, or only the transferring of the impression to the wood. Mr. Dean had just handed him a specimen of imitated baywood, which was certainly commendable, as there was a quietness and modesty about it not always seen in grained work.

Mr. J. BLORE (taking from the table a tile with a wood pattern upon it) could not quite see the advantage of manufacturing tiles in imitation of wood, though the invention was very ingenious, and would, no doubt, prove exceedingly useful.

Mr. BOTTOMLEY said the process of printing from the grain of wood on paper was not new, as it had been in use some time by the French for paperhangings, which had been imported into this country rather extensively during the last few years.

Mr. BLORE would also like to know whether the durability of this system for external work had been tried.

The CHAIRMAN observed that this would probably depend on the varnish, and that there seemed nothing in the process itself which would make it differ in this respect from other graining.

Mr. MORANT inquired whether the graining was applied to the wood direct, or whether a "ground" had first to be prepared.

Mr. BOTTOMLEY said, in correction of one statement in Mr. Dean's paper, that the best oak graining was now not done in distemper, but always in oil; the inferior work was done in spirit.

Mr. JOHN LAND said the process had been mentioned as being more durable than ordinary graining; but he saw nothing in it to render the effect more lasting than graining in oil. He saw nothing in the specimens exhibited beyond what he had seen produced on paper in distemper, which, when applied to woodwork and varnished, had exactly the same appearance. He should have liked to have seen more variety in the specimens, and did not doubt but that many other kinds of wood could be imitated. He begged leave to call Mr. Dean's attention to the beautiful specimens of wood in the museum at Kew, some of which would be very difficult indeed to imitate by hand, and, therefore, if they could be copied by this process, there would be a real advantage in it. At present they were confined to two or three descriptions of wood for interior work in houses, owing to the difficulty of imitating others, which, in some cases, would no doubt render the copy as costly as the original; therefore, if some of these beautiful woods, both English and foreign, could be imitated at a reasonable cost by this process, decorators would have their means of ornamentation much extended. He understood from Mr. Dean that the cost of his process was about a shilling per yard.

Mr. LAING said he had had an opportunity of inspecting the specimens by daylight, and was very much pleased with them indeed; one feature about the work which had struck him particularly, was that the mouldings were as elaborately finished as the plain work, which was not the case with graining done by hand, where mouldings and such like parts were simply run down with the comb. Of course, the men being paid by the piece, their object was to get through as much work as possible in the time, and the more difficult parts, such as mouldings, were accordingly done just so as to pass muster; in the specimens exhibited, however, one part was as good as another. It had struck him that the light and dark specimens were clearer and more distinct than the intermediate shades. To his mind, the great advantage of this process was that graining of first-rate quality could now be executed in the provinces, where it was at present difficult, if not impossible, to obtain the requisite skilled workmen to do it by hand, and thus many country-houses would now be decorated in this way, where, hitherto, such a thing would have been out of the question.

Mr. YARDLEY thought there were one or two inaccuracies in the paper which he should like to correct. It was said that there was a reluctance on the part of architects to employ graining, on account of the bad manner in which it was often done; but, he believed, the real reason was the desire, which had been alluded to by the Chairman, to avoid everything in the nature of a sham, and also the question of expense. It was much cheaper to stain deal, which, in many cases, showed a very beautiful grain through the stain, than to have it painted and grained. He should like to know whether Mr. Dean's process was applied to the wood plain, or whether it required painting first, because, of course, if the latter were the case the cost would be increased. Mr. Dean had spoken of 2s. and 2s. 6d. a yard being paid for graining, but he had never known more than 2s. or 2s. 3d. being allowed by an architect, including the preliminary painting, and two coats of varnish afterwards. He should like to know whether the process was applicable to delicate woods, such as bird's-eye maple and satin wood.

Mr. MILLER asked if the process could be applied in imitation of parquet flooring, and if so, at what expense?

Mr. DEAN, in replying to the questions which had been put, referred first to that put by the Chairman as to the imitation of hard woods. A specimen of bay wood was on the table, and there were also specimens of Hungarian ash; and bird's-eye maple was in process of trial. The fact was, however, that he had not as yet been able fully to experiment on many of these kinds of wood, from being engaged in carrying out his patent commercially, and also from the difficulty which was experienced in getting suitable specimens of wood with which to experiment. He thought the question as to the applicability of the process to encaustic tiles had been made sufficiently evident in the paper by reference to the case of Mr. Robson, of Liverpool, who had used nearly 1,000 yards of tiles embellished in this manner in the dados and staircases of the new public offices. Mr. Bottomley had stated quite correctly that for some years past the French had transferred the natural grain of wood to paper for paperhangings, but they had not gone beyond that, whereas he had succeeded in re-transferring the impression from the paper to either a painted or plain deal surface, the latter being specially applicable for churches. He had carefully examined the many beautiful specimens of woods in the museum at Kew, and he had not the smallest doubt that very many of them could be successfully employed in this process; but experiments would have to be made, which would take some little time. He had had great difficulty in procuring specimens of bird's-eye maple and Hungarian ash suitable for his purpose. These difficulties would no doubt vanish by degrees, but still they were sufficient to show that time was required for the perfecting and development of the invention. At Bradford, in Yorkshire, while in conversation with one of the principal painters and decorators, it was suggested to him that his system would be very useful to men who were not in a position to employ first-rate grainers; his reply to that was, that in a week he could put these second and third-rate men in a position to compete with, if not to surpass, those who employed the best grainers money could procure. As to the price, he had given pretty full details in the paper, and he would add that Mr. Crossley, of Newark, had told him he had paid as much as 5s. a yard for graining alone. He did not think the system was applicable to parquet flooring, for floors were intended to be walked upon, and however good might be the varnish the pattern must be rubbed out in a comparatively short space of time. The encaustic tiles in imitation of parquetry had, however, been used to a considerable extent, and for the borders of rooms appeared particularly applicable. It was only right, however, to say that many persons had taken exception to the application of the process to tiles, and he had for this reason mentioned its employment by Mr. Robson, at Liverpool, where it had been considered very successful.

The Chairman then moved a vote of thanks to Mr. Dean, which was carried unanimously.

Proceedings of Institutions.

Yorkshire Union of Mechanics' Institutes.—*Woodhouse Mechanics' Institute.*—The eighteenth anniversary of this Institution was held on January 4th, in the hall of the Institute, under the presidency of Mr. James Kitson, who was supported by Mr. E. Baines, M.P.; Mr. R. M. Carter, M.P.; Dr. Frobisher; Mr. McCarthy, president of the Woodhouse Temperance Association; Mr. Henry H. Sales; Aldermen Hornby, Addyman, Joy, and Shepherd; Councillors Gallsworthy, Wood, J. W. Smith, Gaunt, Thompson, and Dixon, and other gentlemen. The committee reported that the classes had been attended by 104; the average weekly attendance had been 100; and there were 12 gratuitous teachers and one paid teacher, two superintendents, and two librarians. The committee were glad to report a better attendance this session; the female classes especially had been better attended than in any previous session. This satisfactory result the committee attributed to the strict and diligent attention of the three ladies who had the management of the class. The committee expressed their best thanks to these ladies. The Mechanics' treasurer commenced the present financial year with a balance in hand of £1 2s. 11d.; his receipts had been £71 12s. 3¾d.; disbursements, £70 10s. 1¾d., leaving a balance in hand of £1 2s. 2d. This amount being deducted from an old outstanding account of £25, owing to the Sick and Benefit Society, left a balance against the committee of £23 17s. 10d. The classes for males were elementary and advanced writing, ditto reading, arithmetic, and mensuration. There was also a drawing class conducted by Mr. Rawlinson (one of the certificated teachers from the School of Art), who kindly gives his services. The class numbers 15 pupils. After an address by the Chairman, and the adoption of the report, special addresses were given by Mr. E. Baines, M.P., "On the Pleasure resulting from the Proper Use of our Faculties;" Mr. R. M. Carter, M.P., "On Scientific Instruction;" Mr. Henry H. Sales, "On Education Promotive of true Independence," and Mr. E. Grubb, "On Temperance." The subjects were previously selected for the speakers by the committee of the Instition. *Calverley Mechanics' Institute.*—A crowded meeting of the members of the Institution was held on January 6th, in the lecture hall of the Institute, under the presidency of Mr. Reuben Walton, and an address was given by Mr. Henry H. Sales, "On Scientific Instruction, and the means for its attainment." *Marsden Mechanics' Institute.*—The annual soirée was held on January 7th, in the Mechanics' Hall. Mr. E. A. Leatham, M.P., occupied the chair, and amongst those who took part in the proceedings were Mr. R. M. Carter, M.P., Mr. L. R. Starkey, Rev. D. Robinson, Rev. T. W. Holmes, and Mr. J. B. Robinson, the President of the Institute. The Chairman delivered an address, in which he deprecated the introduction of compulsory education, and the imposition of an educational local rate. *Brighouse Mechanics' Institute.*—The twenty-second annual meeting, under the presidency of Lord Frederick Cavendish, M.P., was largely attended. His Lordship was supported by Sir Francis Crossley, Bart., M.P., Mr. H. W. Ripley, M.P., and others. Judging from the report, the Institute flourishes. The members number 292, being more than were ever previously on the roll, and an increase of 107 over last year. The number of class members is 186, and the average attendance 143. At the last examination in elementary education in connection with the Yorkshire Board of Education seventeen candidates competed, to whom twelve certificates—two in the higher and ten in the lower grade—were awarded. A chemical class has lately been commenced, and there is a newsroom and library containing nearly 1,000 volumes. Lord F. Cavendish, in his opening speech, said that all who had heard the report read must feel that those who addressed them must do so in a series of congratulations. It seemed to him that the history of that Institution was very much the same as the history of kindred organisations. Although there was a difficulty encountered in respect of elementary instruction when such Institutions were started, yet, to take the country through, it would be found that this difficulty had been overcome, and that the higher grades of education were being taught; and he had to own, therefore, that it was with some surprise and shame when, being on a Parliamentary Committee last year on the subject of technical education, he found how very far the West Riding had allowed itself to be beaten by Lancashire. What the cause of this was he had not been altogether able to learn. He had received no explanation but this—that the attention of the people of Yorkshire had not been turned to the subject to the same extent. The attention of Yorkshire had, however, now been directed to the matter, and with results that promised every success. In Yorkshire, at the present moment, there were more than 100 schoolmasters who were being trained to teach scientific subjects in their schools, and while last year there were only twelve or thirteen scientific classes, within the last two months twenty-two new classes for scientific instruction had been started. This showed that if it was owing to attention not having been directed to the subject, it was not from any undervaluing of its importance that Yorkshire had allowed herself to be superseded by Lancashire. If we would maintain our pre-eminence as an industrial nation, our working men must be trained technically as well as practically in the labour that they undertook. Mechanics' Institutions were admirably fitted to impart such instruction; but it must be remembered that high and important as was manufacturing pre-eminence, there were other things of equal if not greater importance, which such Institutions were fitted to aid—they were calculated to promote the well-being and elevate the character of the people. He would ask the ladies if their husbands who were members of that Institution, and attended its classes and read its books, were not, as a consequence, better heads of families than were those who wasted their spare time in the beer-shop or the public-house. Institutions fitted to give this training were of the greatest importance, now that there was no class in the kingdom which could not say that it possessed all the rights and privileges and duties of citizenship. He had noticed that out of 460 competitors who had entered into the last examination of the Yorkshire Board of Education, only some 200 succeeded in obtaining certificates—or, in other words, that only four out of every nine were successful. Of the candidates connected with the Brighouse Institute six out of nine succeeded, so that they had been half as successful again as the average number of successful competitors from all the Yorkshire Institutes. His lordship then presented the certificates awarded by the Yorkshire Board of Education. Sir F. Crossley, Bart., Mr. H. W. Ripley, M.P., and others afterwards addressed the meeting. *Halifax Mechanics' Institute.*—The annual meeting of this Institute was held in the lecture-hall, on January 12th, under the presidency of Viscount Halifax, who took exception to the speech of Mr. E. Leatham, M.P., on compulsory education and local rating, delivered at the soirée of the Marsden Mechanics' Institute. The most noteworthy feature of the evening was the presentation to the president, Mr. Stansfeld, sen., of his portrait by the members of the Institute. Lieut.-Col. Akroyd, M.P., on behalf of the subscribers, spoke in the highest terms of Mr. Stansfeld, and begged his acceptance of the memorial of their regard. Mr. Stansfeld having replied, other addresses were given by Mr. Stansfeld, jun., M.P., Sir Francis Crossley, Bart., M.P., and others.

SOCIETY OF ARTS.

(*Continued from p.* 147).

Drawing and Modelling Schools.

Another subject of inquiry, which grew out of the Exhibition, viz., drawing and modelling schools, is thus referred to in the address delivered by the Chairman of the Council—on the 15th of January, 1851.

"Already a stronger connection between the artist and manufacturer is springing up, beneficial to both. It will be the duty of the Council to foster this connection, and they are considering a plan by which a friendly meeting for the discussion, investigation, and best means of promoting the union of art and manufactures may take place every year, in some one of the great manufacturing centres, somewhat on the principle of the British Association and the Archæological Societies. Connected with such a union, the Council feel that much remains to be done to educate the mass of the people in the perception and practice of art—a fact which the Exhibition is likely to make but too apparent—and, taking advantage of the lesson we are likely to be taught, the Council propose making an effort to establish elementary drawing and modelling schools throughout the country. They have submitted this proposition to H.R.H. the President, and they have the satisfaction of knowing that he thinks it may prove very useful."

About the same date the attention of the members was requested to the following proposition of Council, on the subject of elementary drawing and modelling schools:—

"Society of Arts' Elementary Drawing and Modelling Schools.

"The Council of the Society of Arts propose that the aid and influence of the Society should be engaged to promote the establishment of elementary drawing and modelling schools, chiefly for artisans.

"The Council are strongly impressed with the desire of our young artisans to obtain a knowledge of drawing, and the many advantages which they may derive from it; at the same time the Council are aware of the great difficulties which are at present interposed, from the want of efficient instruction within the reach of the artisan.

"The Council do not limit their appreciation of the advantages of drawing and modelling solely to those improved facilities in manufacture which they unquestionably afford to mechanics; but the Council trust that these useful arts will be found to occupy the young in pursuits tending in every way to their improvement, and to provide them with the most wholesome sources of instruction and enjoyment.

"The Council are of opinion that this project, while it forms one of those useful undertakings which may properly emanate from the increased progress and influence of the Society, will be found entirely within its original scope and objects. The assistance and co-operation of the Society are made dependent upon the following conditions:—

"1. That such schools shall be called by the names of the localities in which they are established: 'The Drawing and Modelling School for Artisans, under the superintendence of the Society of Arts.'

"2. That localities, whether represented by corporate or parochial authorities, or by a committee, shall engage to provide, keep clean, warm, and light a suitable room, and fittings, for the use of the school; and also to insure a sum of not less than £50, by subscriptions, donations, and students' fees, for the support of the school for twelve months.

"3. That each locality shall appoint a committee of management, which shall consist of subscribers of not less than ten shillings each per annum, and shall include some of the members of the Society of Arts (not less than three) residing in the neighbourhood.

"4. That this committee shall adopt the general rules framed by the Society for the government of their affiliated schools, and that all such schools shall be under its superintendence.

"5. That the committee shall be responsible for the custody and safe return of the property of the Society which is lent for the use of the school.

"6. That the committee shall appoint a secretary and treasurer, who shall keep minutes and accounts; and that the committee shall annually make a report to the Council of the Society of the state and progress of the school.

"Upon a compliance with these conditions, the members of the Society engage to render every support and facility in their power, and to use their influence to insure the success of the schools established. They propose:—

"1. To prepare a concise code of general rules, which shall form a useful manual of management and instruction.

"2. To recommend a suitable trained instructor, who shall attend and give instruction two hours in each of three evenings weekly, during the appointed period of session.

"3. To provide and lend, until the school is self-supporting, suitable drawings, models, and examples; and, occasionally, books of reference.

"4. To appoint a rotation of visitors well qualified to superintend the course of instruction and the conduct of the school.

"5. To give, at their annual distribution, by the hand of their president, medals and rewards to those students who have distinguished themselves by ability and good conduct."

In February, 1852, a committee was appointed by the Council to carry out the establishment of elementary drawing and modelling schools for artisans and mechanics. The Council had put forth a statement of its views and intentions, from which the following are extracts, and to which the committee desired to direct the attention of the members of the Society generally:—

"The Great Exhibition has materially strengthened a growing conviction that one of the most serious disadvantages under which ornamental British manufactures are produced, is the want of artistic knowledge and executive ability on the part of the artizans engaged in producing them. Every one competent to judge admits that the ornamental productions of the French exhibit more ability on the part of the French workmen in drawing, modelling, chasing, &c., than of our own. The Council believe that a radical cure for many imperfections of British manufacture will be found in a much more enlarged and liberal system of art education than at present exists—an education which shall make the power of drawing at least as easy as that of writing, and shall begin at an early period of life. The Council are convinced that there is hardly any handicraft in which a workman can be engaged—as a carpenter, mason, smith, tailor, &c., which would not be greatly improved by an ability to perceive the form of objects correctly, and represent it with precision.

"At present the schools of design are supported partly by a Government grant, partly by students' fees, and partly by voluntary subscriptions.

"Under this system, most of the schools of design are in debt, and the progress of them is rendered doubtful and disheartening.

"As some time must elapse before it can reasonably be hoped that elementary drawing and modelling schools can be altogether self-supporting, some assistance will be required, temporarily, at least, in the provision of suitable house accommodation. Having the experience of the present state of the schools of design before them, the Council venture to advise those localities which desire to possess the advantage of elementary schools not to rely on subscriptions as any permanent source of income, but rather to obtain powers from the Legislature of raising a moderate rate, and to reject the system of canvassing for subscriptions, or the expectation of obtaining an adequate endowment. It may be estimated that a very moderate rate indeed, not exceeding a penny in the pound on the rental, in the majority of instances, would enable many hundreds of localities to have the benefit of an elementary school. But as some time must necessarily elapse before the requisite powers can be obtained from Parliament to levy a rate* (this power has since been obtained), the Council recommend that the school be established in the mean time by means of subscriptions and donations, aided by fees from the students, which, at the beginning, ought not to exceed a penny for each time of entering the school to receive a lesson.

"The Town Council of Bradford, Yorkshire, a most important manufacturing centre, as yet without a School of Design, have invited a deputation of the committee to attend a public meeting there, on Monday, the 2nd February, 1852, that the inhabitants of the borough, and persons engaged in the staple manufacture of the district of the West Riding, may have an opportunity of hearing and considering the views and explanatory statements of the Council.

"This meeting, and an adjourned meeting convened for the evening of the same day, will be attended by gentlemen from the neighbouring manufacturing towns of Leeds, Halifax, Huddersfield, &c.

A deputation, consisting of Gen. Sir Charles Pasley, K.C.B., Mr. Henry Cole, C.B., and Mr. Owen Jones, accordingly attended the meeting held at Bradford, a full report of which was published by the Society at the time. The chair was taken by the Mayor, when, after several addresses, a resolution was moved by Mr. Titus Salt. In doing so he said, "As a manufacturer engaged in the trade of this district he would readily admit that improvement in the art of design and the arrangement of colour was much required. It was clearly shown in the Great Exhibition that we were far behind many of our Continental neighbours. . . . He thought the time had now arrived when they should exert themselves to improve the beauty of their designs. . . . He moved—That this meeting fully recognises the great advantages derivable from a self-supporting institution, calculated to improve the art applied to the manufactures of Bradford and its neighbourhood and the general taste of all classes, and especially of an elementary, drawing, and modelling school, as an integral part of it, and in connection with the Council of the Society of Arts, will take vigorous measures for giving effect to the same." The resolution was seconded by Mr. Robert Milligan, and supported by Mr. Alderman Rogers.

The proposal submitted was to erect in Bradford a self-supporting Art-Manufactures Institute; and at a second meeting held in the evening, and attended chiefly by the working classes and members of the Mechanics' Institute, the plan and objects of the proposed institute were fully set forward, and a prospectus submitted for raising a capital of £6,000.

The following resolutions were unanimously passed at a public meeting held in Halifax on the 4th of the same month, which was attended by Mr. Yapp, as a deputation from the Society.

"1. That a committee be formed of the directors of the Mechanics' Institute and the merchants and manufacturers of the town and neighbourhood, with a view to obtain ample accommodation for a drawing school in connection with the Society of Arts, and to place themselves in communication with the Society for the purpose of promoting the objects of practical utility, recommended by the deputation from the Society.

"2. That Samuel Waterhouse, Esq., mayor; Henry Edwards, Esq., M.P.; the president (James Stanfield, Esq.,) and vice-presidents (John Crossley, Esq., and the Rev. W. Turner), and directors of the Mechanics' Institution, *ex-officio*, and the following gentlemen, form a committee—Edward Akroyd, Esq., John Baldwin, Esq., John Sheppard, Esq., H. McCrea, Esq., John Whitworth, Esq., with power to add to their Number, and that Mr. G. Schischkor and Mr. James Dennison be requested to act as secretaries."

In addition to the above, the Council received applications for advice and assistance, of the kind offered in the paper lately circulated by them, from Exeter, Marylebone, and Kensington; and they at once set on foot the preparation of elementary copies, and of models of solid forms, to be used in the elementary schools, and took measures to procure materials for the use of the scholars, of the best quality, and at a low rate of cost.

The following letter was received from the residents of the borough of Marylebone, and was duly considered by the Council:—

"We, the undersigned residents of the borough of Marylebone, being convinced that great advantages would arise from the establishment of an Elementary Drawing and Modelling School on the system proposed by the Society of Arts, request you to inform the Council that we are willing to co-operate with them in any proceeding that may tend to promote Art-Education in the locality for which we are interested."—Signed by 29 residents, chiefly manufacturers.

While this action was being taken by the Society, the Government was re-modelling its Schools of Design, and in February, 1852, the Department of Practical Art was established, and on the 10th March, 1852 a letter by the Superintendents of the Department of Practical Art (Mr. Cole and Mr. Redgrave) was addressed to the Right Hon. J. W. Henley, M.P., President of the Board of Trade, in which they say—

"In entering upon the duties of this new department, we venture to suggest that a leading principle of its future management should be the endeavour to make the department, as far as practicable, self-supporting in all its branches. We apprehend it will be found, on the one hand, as the department responds to the wants of the people, so on the other, the public, as individuals, will be ready to pay, to a considerable extent, for the educational advantages which it offers. We think *it is apparent* that in the most successful institutions in this country the public use them and pay for the use of them according to their sense of their value, and thus render extraneous aid in a great measure unnecsssary.

"The minutes of the Board of Trade, of the 16th February, point to three principal objects as constituting the business of the new department:—

"1. The promotion of elementary instruction in drawing and modelling.

"2. Special instruction in the knowledge and practice of ornamental art.

"3. The practical application of such knowledge in the improvement of manufactures."

They then proceed to point out what steps are necessary in order most efficiently to carry out these objects, and they say in paragraph

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* Mr. Ewart's "Museums Act" gives the rating power to municipal bodies for many Institutions, but, unfortunately, omits to secure Schools of Design or Drawing Schools, though they are evidently within the purport of the Act. This should be remedied by a short Declaratory Act, adding them especially to the list of institutions.

"14. In order to assist both the establishment of additional schools on a principle of self-reliance, and to increase the interest of the localities in the existing school, we think it right to notice a suggestion frequently made, that the legislature should give power of levying a moderate local rate for the support of schools of ornamental art until they become self-supporting. We are of opinion that a dependence on local rather than general taxation is calculated to awaken the greatest amount of local interest and attention to the subject, and we think that a higher and more practical development would be given to such schools by enabling them to connect themselves with the museums of art which, by the existing law, may be supported by local rates."

And at the Council Chamber, Whitehall, on the 31st March, 1852, the following minute was passed "by the Right Honourable the Lords of the Committee of Council appointed for the consideration of all matters relating to trade and foreign plantations; present, the Right Hon. J. W. Henley, M.P., the Right Hon. Lord Colchester." Read (the above) letter from the Superintendents of the Department of Practical Art:—

"My Lords are pleased to express a general agreement in the views developed in this letter, and consider that it will be desirable that the same should be communicated to the Managing Committees of the Local Branch Schools for their information.

(Signed) "J. W. Henley.
"Colchester."

The Government having thus taken the subject up, the necessity for further action on the part of the Society ceased; but it must ever be a source of satisfaction to the Society that it took so active a part in initiating the drawing and modelling schools, which have proved of so much practical utility to the art industries of this kingdom.

Union of Institutions.

I have already stated that on the 28th November, 1851, Mr. Harry Chester addressed a letter to the Society of Arts in reference to the formation of a Union of Institutions. The following is the letter referred to:—

"Highgate, Nov. 28th, 1851.

"Sir,—Being desirous that the attention of the Society of Arts should be drawn to a subject which I am persuaded is of considerable importance, and consistent with the Society's objects, I beg leave to request your perusal of the following exposition of my views, in order that, if you coincide in the opinion which I have just expressed, you may take a fitting opportunity of presenting the subject to the Council.

"I have to propose that an effort should be made to develop existing, and to create new, Institutions of the class commonly called Literary and Scientific Institutions, Mechanics' Institutes, &c., and to affiliate them to the Society of Arts.

"As some excuse for what may be deemed my temerity in making such a proposal, I may mention that I have had considerable experience in reference to National Education; and that I was one of the originators, and have been (from the origin of the Society) the President, of the Literary and Scientific Institution in this place.

"There is now scarcely a town, or considerable village, which has not its Institution under some form and name; but, with very rare exceptions, the Institutions are generally in a languishing condition, both as to funds and as to usefulness. I do not mean to assert that they are of no use, but merely that they are not half as useful as they might be.

"The Exhibition has given us some very significant hints that it is not only the education of our poor children that needs to be improved; high and low, rich and poor, old and young, have all an education question to be solved; have all a very real and urgent need of knowledge, and of knowledge of that kind which a Literary and Scientific Institution, if fully developed, is well calculated to assist in affording.

"I conceive that there are three grand defects which impede the usefulness and the strength of the Institutions.

"1st. They are not sufficiently practical in their aims.

"2ndly. They are isolated and have no means of combining with other Institutions for the common good.

"And 3rdly. They have no connexion with the great central associations which pursue under national auspices the objects of Literature, Science, and Art.

"1st. They are not sufficiently practical. I conceive that a Literary and Scientific Institution ought systematically to investigate and diffuse information respecting objects of practical utility.

"The Highgate Institution some years since fully investigated the subject of Cottage Gardens and Allotments; and the result was the establishment here of a considerable number of allotments upon a plan which has worked with complete success.

"We are now making an inquiry into the domiciliary condition of our poor, and collecting information respecting the best means of improving it. The Institution itself will not undertake any building or other operations with a view to their improvement, but will ensure a full ventilation of the subject; and the result, in all probability, will be that (as in the case of the allotments) the business of improvement will be effectually taken up by some of those who will be moved to the work by the information which the Institution will furnish.

"I need not point out how rapid a progress would be made, in all parts of the country, in improving the dwellings of the poor, in sanitary measures, and in the use of scientific inventions, if the Local Institutions throughout the country could be led systematically to aim at these very important objects. Questions also of political economy (not politics) and social law, I conceive should be treated in the theatres of these Institutions. How much the passing of useful laws would be facilitated if this were the case! Not to be tedious, I would instance the laws of partnership, of bankruptcy, of patents, of master and servant, as suitable for discussion by competent persons in such places. And, again, how little are the great mass of the middle classes acquainted with the useful inventions which (*e.g.*) receive medals from the Society of Arts! Why should not these be systematically introduced to the notice of the Institutions?

"The Highgate Institution has entered upon this branch of duty, and is preparing to have a descriptive exhibition of the various applications of gas to lighting, warming, cooking. How very few persons have ever seen a gas-cooking apparatus! what ludicrous prejudices are entertained on this subject! I cannot but think then that the strength and usefulness of the Institutions would be greatly increased if they could be moved to be more practical in their aims, and to labour (in due proportion) in the directions to which I have adverted.

"2ndly. They are isolated, and have no combination for the common good. The evils of this isolation are too obvious to need any comment, and many attempts have been made to combine the Institutions for the purpose of engaging lecturers, obtaining the use of apparatus, and putting into circulation books, works of art, natural objects, &c.

"In Yorkshire a considerable association of Institutes exists; and I believe it is productive of good.

"What we want, however, is a central office in London, to which we could apply for advice, information, and assistance. Such an office might form an extensive staff of lecturers, men eminent in their special subjects; might collect illustrative specimens and diagrams; and on application supply the local Institutions with lecturers and lectures on almost any subject. By judicious geographical arrangements the most distant Institutions might be suppied at a reasonable rate with lecturers whom they now are entirely unable to remunerate because they cannot ensure to them other engagements in the same neighbourhood.

"Whether such an office as I have alluded to should be created for the purpose, or whether any existing body, such as the Society of Arts, could undertake it, I am unable to say.

"But 3rdly. The local Institutions have no connection with the great Central Societies.

"If the Institutions could be connected with the British Museum, the Association for the Advancement of Science, the Geological, Botanical, Zoological, and other Societies, whose objects may fairly be considered to come within the scope of the Institutions, I cannot but think that great good would result both to them, and to the Central Societies.

"Above all others, the Society of Arts appears to me to be a Society with which Institutions might unite, by affiliation, with mutual advantage.

"I refrain from entering fully, at present, into this subject, because the Council, if they should approve of the idea, would not need my exposition of its merits; and because I am unwilling to add to the length of a letter, too long already.

"If you should be of opinion that the subject is one which the Council of the Society would be likely to entertain, you will have the goodness to make such use as you may think fit of what I have written in this letter.

"I have the honour to be, Sir,
"Your obedient servant,
"Harry Chester.

"George Grove, Esq., Secretary, Society of Arts."

A committee was appointed to consider and report on the proposed Union of Institutions, and, on the 18th May 1852, a Conference was called at the Society's House in the Adelphi, the Marquis of Lansdowne, K.G., in the chair. At the close of the Conference in the evening a public dinner took place at the Freemasons' Tavern, over which the Earl of Carlisle presided, at which the delegates and members of the Society cemented still further the union formed during the day. Shortly after, the following report to the Council was made by the Committee appointed to consider the proposed union with Literary and Scientific Institutions and Mechanics' Institutes.

"We have arrived at that stage in the important matters referred to us, which we think renders it essential at once to submit our proceeding formally to the Council, with a view to obtain its sanction to the ulterior steps which now become promptly necesssary.

"After having obtained, by means of a circular of interrogatories, the opinions and concurrence of nearly 400 of these bodies, as to the general advantages which might be derived from a union with this Society, we solicited the attendance of their representatives at a general Conference.

"This meeting was held on the 18th inst., under the presidency of the Marquis of Lansdowne, and was attended by no less than 140 representatives from Institutions in every part of the country. We append for your information a full report of the proceedings, and beg your particular attention to the following resolutions, which were then unanimously adopted; as well as to such more detailed views as we have formed respecting them after a further Conference which we held with the representatives on the following day:—

"1. That the success of Literary and Scientific Institutions, and Mechanics' Institutes, in the cultivation of literature, science, and art, and in the diffusion of useful knowledge, might be powerfully promoted by the combination of many Institutions in Union with the Society of Arts, on the basis of perfect security to the continued independence of the Institutions, and the freedom of their self-government.

"2. That this meeting accepts the "Memoranda of Replies, &c." as a sufficient statement, in general terms, of the advantages which may be expected to result from the proposed combination and union; and requests that the Society of Arts will appoint a special committee to carry out the foregoing resolutions; and that every institution in union with the Society will nominate a representative, to form one of a representative council, which shall have quarterly, or other Conferences, with the said special committee.

"3. That the pecuniary conditions of union should be calculated to protect the Society from loss, and to afford to the Institutions the full value of the payments which they may make.

"4. That this meeting is of opinion that Literary and Scientific Institutions, and Mechanics' Institutes, are calculated to promote the interests of religion and morality, by the cultivation of literature, science, and art, and by the diffusion of useful knowledge; and that this meeting earnestly invites all classes to unite in supporting and improving such Institutions and extending their powers of doing good.

"With respect to the mode of carrying out the third resolution we suggested to the representatives, that the best and most simple pecuniary arrangement would be—that the president of each Institution entering into Union should be elected a member of the Society of Arts; and that the usual members' subscription of two guineas a year paid by him should be deemed a sufficient remuneration. We proposed this after mature consideration, as admitting to the most intimate and honourable connexion with the Society. But we found that some Institutions would be best pleased to pay the subscription of two guineas from their funds, and elect their own representatives to attend the quarterly or other conferences to be held. We therefore propose that either course may be left open to them; but that in either case they should also elect their representative—and we think that provided a sufficiently large number of Institutions enter into Union the subscription of two guineas will indemnify this Society.

"We entered as fully as we were able, into the question of the advantages which might be received by Institutions received into Union. The periodical conferences would not only bring them into connexion with this large central Society—but, what is of not less importance, would be the means of intercommunication and union with each other. They would receive the weekly paper of proceedings, printed by the Society, during the Session; and all the transactions and publications of the Society. We think also that to each Institution three admissions to all the Society's meetings and Exhibitions might be given—and that the members of distant Institutions when in London might be introduced at all times, on application, without limit as to number, to the Society's meetings, Exhibitions, and Library. The Institutions would also correspond with the committee, and receive such advice, information, and assistance generally as it is in the power of the Society to give. These are the immediate benefits which we hope would at once be secured by the annual subscription of two guineas.

"We speak with some diffidence as to the further assistance which may be immediately rendered. We think that some time will be required to develop fully the advantages to arise from the union, and that much will depend upon a zealous and kindly spirit of co-operation (on which we rely) upon the part of the Institutions. The first step to be taken, and one in accordance with the wish most generally expressed, would be to organize for the ensuing autumn some plan of lectures, which, without necessarily superseding such lectures as the Institutions may themselves provide, should afford them the option, at a stated price, of lectures of practical utility, by lecturers whose competence is well recognized in the various branches of literature, science, and art. We would also advise that catalogues should be circulated of the models, works of art, and books belonging to the Society, and that, under well-defined conditions, these should be lent to Institutions, to illustrate any lectures, conversazioni, or occasional exhibitions which they may get up.

"Another step would be to make known and place within the reach of Institutions, the Society's box of water colours, price 1s.; the cases of mathematical drawing instruments, price 2s. 6d. and 6s.; and to stimulate the production of other materials, books, &c., at prices which may be warranted by the number required, and the new wants created, but not by so doing to interfere, in any way, with the ordinary course or channels of trade.

"As the plan would develop itself in its successful working, we trust it is not taking too sanguine a view of the resources of the Society of Arts to expect that exhibitions may be assisted and facilitated; that the Institutions may be brought into close and useful communication with the Society, and with each other; that the Society's paper of proceedings may be gradually enlarged, till it takes the form of an Institutional periodical; that the lectures may be extended and systematised; that an annual report may be prepared, combining the most valuable statistical information with reports of the working of the Institutions, their difficulties, wants, progress, and resources; and, in fine, that the chief advantages referred to in the 'Memoranda of Replies,' with many others, may be secured.

" (Signed) on behalf of the Committee,
"Harry Chester, *Chairman.*"

Middle-Class Examinations.

It is not necessary that I should trace the action of the Union then established through all the stages which it passed. It is sufficient to say that it gave rise to the system of examinations which have been for many years actively in operation, with results of yearly-increasing importance, and the details of the working of which are fully reported in the Society's *Journal.* I may, however, add that the middle-class examinations of Oxford and Cambridge grew out of the Society's action, having been proposed by members of the Society's committee as an extension of the Society's system to other classes than the members of Mechanics' Institutes.

While Mr. Harry Chester was thus actively at work in one direction, Mr. Thomas Twining, a member of the Society, addressed a letter on the 21st August, 1851, to the Right Hon. the Earl of Shaftesbury, on means for improving the efficiency of British artisans, in which he proposed the establishment of a national institution, to be called the "Albertine College of Trades," and indicated the rules which should guide the management, and the nature of the technical instruction, comprising scientific knowledge of a general nature, which should be taught. Copies of this letter were distributed gratuitously through the Society by Mr. Twining. Mr. Twining has continued actively at work ever since, and though he has not succeeded in establishing the proposed college, he has at his own cost erected an economic museum for the benefit of the working classes, and more recently established courses of lectures on science in relation to industries and every-day life, and he is now extending his plan with a view to testing, by means of examinations, the value of the lectures delivered.

Colonies.

While these measures were being carried on with reference to our home industries, arts, and education, our colonies were not lost sight of; for, in addition to the many medals and premiums offered by the Society for colonial products, His Royal Highness Prince Albert added to the list, in 1849, the offer of his own gold medal for the best account of any new and improved machinery or processes employed in the cultivation or preparation of sugar in the British colonies, economising labour and increasing production.

This medal was awarded to Mr. J. A. Leon for his treatise, which was ably written and fully illustrated with working drawings of machinery, and was published for the information of the general public.

Other medals were also offered by His Royal Highness for home productions, and, in 1852, the Council resolved on the appointment of a Colonial Committee, to consider the best means of making the Society useful in advancing the knowledge of the resources and capabilities of the numerous British colonies in all quarters of the world, and in furnishing the colonies themselves with such information as might be required on subjects connected with arts, manufactures, and commerce.

On the 26th February, 1852, a deputation from the committee had an interview with Sir John Pakington at the Colonial Office, to ask the assistance of the Government in reference to the issue of a circular to the colonies with a view to collecting information, and the reply of the Colonial Secretary having been favourable, a letter was accordingly issued to the governors of the British Colonies, through the Colonial Office. It resulted in the collection of much valuable information, which was published in the Society's *Journal* from time to time. In the first number will be found a letter from British Guiana, and in the year 1853, the Council received a communication from the New Zealand Society, in reference to New Zealand flax, placing fifty pounds at the disposal of the Society of Arts, but the Council, not having been called upon to award this premium, directed attention to the offer made by the New Zealand government, of prizes amounting to £4,000, of which particulars were also published in the Society's *Journal.*

The following were the prizes offered:—

"£2,000 to to the first person, and £1,000 to the second person who shall, by some process of their own invention, produce from the *Phormium Tenax*, or other fibrous plants indigenous to New Zealand, one hundred tons of merchandise; and £200 to each of the first five persons, other than those entitled to the first and second rewards, who shall by any process, whether of his own invention or not, produce from the *Phormium Tenax*, or other fibrous plants indigenous to New Zealand, twenty-five tons of merchandise.

"The merchandise must be saleable as an article of export from the Colony of New Zealand, and have been produced at a cost not exceeding 75 per cent. of its value at the port of entry from which it is exported; and the process used must be fully made known with a view to the discovery being at once made available to the public."

With reference to this subject, as well as to the general products of this Colony, the Council arranged for a paper to be read before the Society.

The paper referred to was written and read by Mr. William Stones, and Lord Lyndhurst, upon seeing it in the *Journal*, thought it so able a production that he called at the Society to make inquiries relative to its author. Mr. Stones was one of the parties to the treaty made and signed between the natives of New Zealand and Her Majesty's Government at Waitangi on the 6th February, 1840.

Committees.

A committee for conducting foreign correspondence, and thirty committees, whose business it was to discuss matters relating to trade, were also appointed, but as these were to be worked by voluntary reporters they naturally failed in efficiency, and were soon discontinued. Nevertheless, this showed that the desire of the Council was to broaden the base of the Society's action. The system of voluntary service failed to produce a result, and though I do not think it would be well at present to propose the appointment of thirty paid officers to carry on investigations relating to the application of the sciences and the progress of mechanics as bearing on the Arts, Manufactures, and Commerce of the country, I see no reason why, if in the future it were thought desirable, even that number should not be appointed. It must be remembered that the more agents the Society employs to collect information for it the greater will necessarily be the result of the Society's action to the members themselves and to the country at large.

It is unnecessary to point out the rapid advances which art and science, in their relation to the progress of industry, have made in foreign countries. England, through the instrumentality of the Society of Arts, set the example of gathering together the people of all nations for the purpose of exhibiting to the world the products of their respective countries. The example of England was soon followed by France, Italy, and many European states, by America and the colonies, while, in Ireland, international, and in our own country, local exhibitions have been held in almost every county, I might almost say in every town of importance. Some of the exhibitions, both foreign and local, the Society visited as a body, but as a full record of the most important exhibitions has been printed in the Society's *Journal*, it is unnecessary to refer further to them here.

It is much to be regretted that many of the acts first done, as well as many valuable communications received by the Society at its foundation were never published—and the same may be said of the Society at the beginning of its second period—and feeling that in the future it would be next to impossible for anyone to trace the course of the Society's action during a period full of important results, I have endeavoured, however feebly, still to the extent of my ability, to supply the missing link. I have not attempted to carry in detail what I have said beyond the 26th November, 1852, at which date the *Journal* was first published.

I have already stated that the Society, when it entered upon its enlarged action as a chartered body, proceeded to investigate the anomalies of the patent laws, and also inquired into and reported upon the postal system of this country and the colonies, and a modified system, both in reference to colonial postage and also in reference to the parcel post, was largely induced by its action. Many other important questions affecting the industries and commerce of the country have also been dealt with, such as the advertisement and paper duties, the laws relating to both of which have been materially modified; but during some of these inquiries the Society was without funds sufficient to enable them to publish other than a weekly circular. The publication of "Transactions of the Society" had been suspended for several years for the same reason; but in the year 1851, after the close of the Exhibition, it felt that it was impossible to carry on the business of the Society with advantage to the members and benefit to the public unless some speedy means of publication was established.

The *Journal of the Society of Arts* was accordingly established, and has been regularly issued to the members. In it have been published the papers read, and the discussions which have ensued upon them at the weekly evening meetings. To attempt to recite here the contents of the sixteen volumes of that work, consisting, as it does, of upwards of 25,000 columns of closely printed matter, would be madness. It is sufficient to say that in its pages are recorded most of the attempts which have been made during late years to promote Arts, Manufactures, and Commerce. Many of the accounts appeared, as they should do, at a time when the public mind was unprepared to receive and discuss the feasibility of the propositions brought forward; but nevertheless, the seed sown has in many cases taken root, and after several years has borne valuable fruit.

FOOD SUPPLY.

As one striking instance I would refer to the address of the Chairman of Council, read in 1853, in which attention was directed to the importance of improving the food supply of this country by seeking out a means of preserving and importing from Australia and other colonies the food there wasted. The Society never lost sight of that important object; it offered prizes and varied the form of the offer from time to time, with little result; but at length some attempts were made, and processes suggested or exhibited in the Society's rooms, and the Society, nearly three years since, appointed a committee to inquire into the best means of improving the food supply of this country. The committee, for two years past, has met once or twice a week during the session, investigated, taken evidence, and reported in the *Journal* the results of its inquiries; and now, within the last few weeks, articles have appeared in the papers referring to several attempts at importation which have been made, and the public are beginning to look with interest to Australia, South America, and other districts, for an increased food supply. I am glad to be able to say that the Society is continuing its investigations, and I hope, at no distant date, will be in a position to report that the results of the experiments now going on have been successful; but of this I feel sure, that so important a question cannot be allowed to remain unsolved, either in the interest of the colonies or of the mother country.

I might refer to other cases of a similar nature, but as each volume has been fully indexed, and an analytical index of the contents of the first ten volumes has long since been published, I must refer those who desire to trace up the Society's action in fuller detail to the *Journal*, in which, if they will look to the addresses of the Chairmen of Council, the reports by the Secretary, and reports of the Council to the Society therein recorded, they will find that much which is now matter of history has been foreshadowed.

MUSICAL PITCH.

The following has appeared in the *Athenæum*:—

This question has now become so prominent that probably a few general remarks on it may be interesting to your readers.

The pitch of a musical note is defined, as is well known, by the velocity of the vibrations causing it,—the pitch being higher as this velocity is greater, and *vice versa*. Thus the note c, on the third space of the treble clef, corresponds to a number of double vibrations per second, varying from about 500 to 550, according to the pitch adopted; and when it is explained that at this point of the scale an increase of about 32 vibrations corresponds to a rise of a semitone, an idea can easily be formed of the variations between one pitch and another.

It is said that in Handel's time the pitch was c = about 500; this now appears very low, and probably the evidence of it is not conclusive; but we know that in 1813, and for about thirty years afterwards, the Philharmonic pitch was fixed at c = 518. During the last quarter of a century it has been constantly rising, and it has been found lately, in our chief orchestras, nearly 550, or a semitone higher that in 1842.

I need not say how intolerable this high pitch has become. It was publicly protested against ten years ago by many eminent singers and musicians, with Madame Goldschmidt at their head; but it required a very determined effort to overcome the reluctance to change; and this, fortunately, has now been supplied by Mr. Sims Reeves.

The height of the pitch appears to me, however, to be a less evil than its uncertainty. At present we are really unable to form any distinct idea of what any note of music means; and hence it is not enough that the pitch should be lowered, but, if a change is to be made, a definite uniform standard ought to be agreed on, and, as far as possible, made of universal application.

The question then becomes, what ought this standard to be? The choice lies between three, all possessing good claims to consideration.

The first is what is called the philosophical pitch, in which the note c is assumed to have a number of vibrations corresponding to the powers of the number 2, so that the treble c = 512. This pitch is strongly advocated by Sir John Herschel and many scientific men, as well as by Mr. Hullah and other practical authorities. It is rather low compared with our present notions, but is one-third of a semitone higher than

Handel's, and only one-fifth of a semitone lower than the Philharmonic pitch of 1813—43.

The second is the French pitch, established by law in that country; it is c = 522, about one-eighth of a semitone above the old Philharmonic. No reason appears to have been assigned, as far as I know, for the choice of this particular number.

The third is the German pitch, which was fixed on by a congress of musicians at Stuttgart in 1834, and has become, I believe, universally adopted throughout Germany. This is c = 528; one-third of a semitone higher than the old Philharmonic, and one-fifth of a semitone higher than the French pitch, but still two-thirds of a semitone below our present operatic scream. It has also some recommendations on theoretical grounds.

Practically, I do not think it matters which of these three may be adopted, as either of them would bring us back to a reasonable pitch. It may, perhaps, be a question for orchestral players whether it would be most convenient for them to assimilate to the French or the German standard; but the latter has the advantage that it has been already adopted to some extent in this country, on the recommendation some years ago of the Society of Arts, and that standard tuning-forks, regulated according to this number of vibrations, are in ordinary sale.

The Committee who drew the Report (of whom I had the honour to be one) appeared generally to prefer the philosophical pitch of 512; but it was thought inexpedient to recommend so great a change; and the German standard was adopted as an intermediate measure, more likely to be acceptable to the musical world.

WILLIAM POLE, F.R.S., Mus. Doc. Oxon.

Athenæum Club, January 16, 1869.

A member, writing to the Editor of the *Journal of the Society of Arts*, says:—In last week's *Journal* was a letter rather advocating the adoption in this country of the musical pitch in use in France. The inquiries which the Society is instituting abroad will probably show that even in Imperial France, where Imperial gold and Imperial will are omnipotent to issue an authoritative tuning fork, the pitch is not the same at all institutions, even in Paris. A letter, drawing attention to several important facts in connection with the musical pitch has recently been published, and some portions are worth recording in the *Journal*, so I send you some extracts:—

"The old battle between vocalists and instrumentalists has been revived in this country on the vexed question of a sonorous standard to be adopted, to be applicable universally; or, in other words, to establish the uniform musical pitch. The progressive elevation of the diapason has, in all ages, been the standard complaint of singers who are approaching the natural termination of their musical career. The elixir of life and the philosopher's stone not having yet been discovered, the human voice has its limits of action and duration, and time will tell its tale on the strongest of organs. The improvements in the making of the wind instruments, the competition amongst military bands to acquire increased brilliancy, the rivalities of leading singers to eclipse each other in extent of compass, were irresistible temptations to composers to seek for novel and startling effects. The elevation of the pitch was, therefore, a natural consequence of a new order of things; but with the progressive tonality the questions arose what was to be its standard? where was it to stop? and what could be done, seeing that no two musical capitals could agree as to a pitch to establish uniformity? And here is a curious fact to be noted, that whereas the most distinguished musicians of all nations have agreed and do agree as to the fixing of one sonorous standard, the differences as to the *modus operandi* cannot be reconciled. Everybody preaches uniformity, but still there is no unanimity, so far as theory goes. Practically this country, without any act of Parliament, without any police intervention, without any musical congress, has the uniform musical pitch. As in many of our social regulations, the public is its own police in the matter. What is called the opera pitch has existed here nearly a quarter of a century without being disturbed either in town or country. An attempt was made in 1834, at a congress of musicians at Stuttgard, to fix the musical pitch, but it was very partially acted upon. The various governments of the Confederation cared more about a normal diapason than they did about German unity, and the directors of each musical institution in Teutonic land took his own line as to the pitch-fork. In France, however, since Duprez startled the world with his '*ut de poitrine*,' a sad state of things was created. The French school of singing has been always credited as being that known by the name of '*criard*,' and in order to attain the elevation of the great tenor, no end of ambitions singers lost their voices. Contemporaneously with the *criard* movement in France, came the Verdi screaming of the sopranos in Italy, in addition to the shouting tenors and bawling barytones. The forcing of the voice was attended with the most disastrous results both in France and Italy; the true art of vocalisation gave place to declamatory violence. The Opera House managers in Paris took fright at the prompt extinction of singers after a few nights of trial, and the movement was set afloat to lower the pitch, and they fell foul of the instrument makers as the main cause of the evil. The composers in Paris coalesced with the opera directors, considering that a growing evil could only be checked by official intervention. The Imperial government granted the formation of a committee to establish in France the uniform musical pitch. The members of the commission were Meyerbeer, Rossini, Ambroise Thomas, Halevy, Auber, and Berlioz, all members of the Institute; MM. Despretz and Lessagous, professeurs de physique at the Faculty of the Sciences; M. Camille Doucet and M. Edouard, connected with the ministerial management of the theatres; General Mellinet, who was chief of the organisation of military music; and M. Pelletier, of the Ministry of State, who was named president of the commission, which was formed in July, 1858, and its report published in the *Moniteur* of July, 1859. The conclusions arrived at by the commission were adopted by Imperial decree, signed by Achille Fould, whereby the 'pitch' in France was fixed under the title of diapason normal, on the basis of 870 vibrations per second for the A, equivalent to our standard of A 435—C at 522. The report is curious in the facts given in evidence of the variability of the pitch; out of 25 tuning forks, 15 were below the Paris pitch. The majority of authorities went for the lowering of the pitch and for the uniformity, but differed materially as to the gradations. More encouragement was received from Germany than from Italy, where the pitch is to this day much the same as our opera pitch, the highest being in Belgium, in the military bands. Scarcely two towns in France were agreed as to the diapason. The maximum elevation of the pitch was the music of the famed band of the Guides in Brussels, the minimum diapason was in Carlsruhe and Toulouse. France, however, in 1859, adopted the 'diapason type,' executing 870 vibrations per second at the temperature of 15 degrees centigrade. The standard is regulated by administrative verification. The French pitch has travelled little beyond the frontiers. It has not been accepted either in Italy, Germany, Belgium, Holland, Spain, or Portugal, in which countries there are varying standards. . . . . The origin of the present agitation arose from the failure of a French tenor who made his *debut* last season at the Royal Italian Opera as *Arnold* in Rossini's 'William Tell.' His *fiasco* was ascribed to the 'high orchestral pitch,' ingenuously put forth as an excuse for the introduction of a singer who ought never to have been engaged; but the best joke with the apology is that the music of the duo, trio, and air was expressly transposed for him. Transposition, indeed, at the Italian Opera House, naturally took place when a singer was out of voice, but the pitch under which Madame Persiani, Grisi, Malibran, Jenny Lind, Rubini, Mario, Lablache, Tamburini, Bosio, Patti, Lucca, and others sang for years was that not only of London but throughout the United Kingdom. It was reserved for a tenor who has won his fame under this pitch to attack it, after singing for more than twenty years without protest. But Mr. Sims Reeves sang recently at Leeds, Liverpool, Manchester, and Birmingham, within a fortnight, and, according to all accounts, was in splendid voice. But if Mr. Sims Reeves conscientiously believes that the present standard is so detrimental, how is it that he has invariably deviated from Handel's scores to bring out his favourite A? The upper A given out with such brilliancy by him in 'Thou shalt break them,' in 'Sound an alarm,' and 'The enemy said,' is not in the scores of the 'Messiah,' 'Judas Maccabœus,' and 'Israel in Egypt.' Mr. Sims Reeves of his own free will thought it expedient for effect to throw out his pet high note. If his reverence for Handel now influences him to sigh for the tuning fork of 1740, ought not similar respect to be paid to Handel's notation? If the musical institutions of this country would not fall in with the recommendation of the Society of Arts how can it be expected that the French diapason will now be adopted, with the question of compensation to instrumental performers and makers yet unsettled? The adoption of one pitch for the musical world is, in fact, attended with as many practical objections as the acceptance of the universal decimal theory for accounts and measurement, and an international coinage. There are too many conflicting interests at stake, and too many theories afloat, to secure uniformity and unanimity." . . . . . .

THE RACES OF INDIA AND THEIR ARCHITECTURE.

It may be hoped that some fruits of the measures taken by the Government of India to send specimen casts of the different styles of ancient architecture will soon be seen in this country. The members of the Society hardly require to be reminded of Mr. Fergusson's paper on the subject, and the discussion which followed (see *Journal*, Vol. XV., p. 71). In elucidation of the several divisions of the races of India, and the better to understand their architecture, the following observations will be useful:—

Aryans (pronounced Arr-yuns).—There is every reason to believe that the great plains of Asia north of India were, in remote ages, occupied by a numerous nation, chiefly pastoral, and that they sent out successive swarms, which spread over the west of Asia and nearly the whole of Europe, Afterwards the great body of the nation crossed the Himalaya chain of mountains, and conquered and occupied most of what is now called India, expelling or enslaving the original inhabitants. Some of these, however, were able to maintain their independence in certain mountainous districts, and a considerable number remained at the southern extremity of India, especially on the eastern coast, just as the Britons occupied Cornwall after the rest of the country had been subdued by the Saxons. To these southern tribes and their languages the name of Dravidian has been given; and the latter, though mixed with many Sanscrit words, are plainly derived from a different stock. The *Santhals*, about whom a good deal was said a few years ago, are also a remnant of the old inhabitants. Nothing whatever is known of the history of the invaders previous to their crossing the mountains, except what can be learnt from the affinities of language, since they had then no written records or public buildings.

Not long, probably, after the descent into India, or about 1,500 years before our era, the sacred hymns which they had brought with them were committed to writing; These are now termed the Rig Veda.[*] Afterwards two other Vedas were composed, or, as the Hindoos say, revealed, for all these are considered to have a divine origin. These other two, the Yajur Veda and Sama Veda, are founded mostly on the Rig Veda, the former having reference to sacrifical ceremonies, the latter having the hymns arranged for chaunting, with, of course, much additional matter. There is another veda, the Atharva Veda, which is chiefly rubrical, containing minute directions for the performance of the numerous religious ceremonies. This is regarded as inferior to the others, which are especially termed the Veda Triad, or three vedas.

Probably soon after the Vedas had been written, the spoken language, which had altered considerably (so as to differ from the Vedic language quite as much as the English of the 14th century differs from Anglo-Saxon), was fixed and regulated by numerous and minute rules, and has ever since been the subject of a very large number of grammatical commentaries. The oldest grammarian, Panini, whose works still exist, lived probably at least seven hundred years before Christ, and he refers to older grammarians. This language, the previous name of which is unknown, was then called Sanscrita, "The perfected or arranged," and it has ever since been the literary language of India, just as Latin was of Europe in the middle ages; and it still keeps its ground, for, though like the Latin a dead language, it has a certain amount of vitality, since it admits of new compound words to any extent, and is, therefore, able to express new objects and new ideas. It is usual to speak of languages being derived from the Sanscrit; this is incorrect, and only a convenient form of saying that they are derived from that language of which Sanscrit is the nearest representative. From this ancient language then are derived a considerable number of the Indian languages, Persian, Greek, Latin, and all the languages of Europe except Turkish, Hungarian, Finnish, Basque, and perhaps Lapp. As the name of the nation is unknown so is that of their language, but since they called themselves Arr-yas—(literally worthy or noble), in contradistinction to the conquered races ,whom they termed Mlêchas, or barbarians—this word has recently been employed to designate the whole race.

Hindoos.—In the Rigveda Agni, fire is the chief deity, and the objects of worship and invocation are mostly the various natural powers or phenomena—sun, moon, wind, clouds, &c. Somewhat later a trinity was worshipped—Brahma, Siva, and Vishnu, three in one. Vishnu had numerous avataras or incarnations. Two of the most famous of these are Ganêsa and Krishna. The images of the former have always an elephant's head. The latter is represented quite black. Besides these there is a vast array of inferior gods, the chief of whom is Indra, corresponding with the Greek Jupiter, as wielding the thunderbolt and dispensing rain, &c. The inferior gods correspond with the nymphs, fauns, satyrs, &c., of Greece. Then there were numerous Rishis or saints, to whom many miracles are attributed, and to some of whom the Scriptures were revealed. The Hindoos believe that every human soul is an emanation from Brahma, and will ultimately return to and be absorbed in him, the interval being long or short according to the piety or otherwise of the man's life, the wicked entering successively into numerous bodies, not only of men, but of brutes. The prayer of every pious Hindoo is therefore for Moksha, or liberation from a mortal body. At the same time they believed that for a time numerous spirits of the good inhabited Swarga, a heavenly paradise. Their notions of time are very extravagant, since they reckon by Kalpas, each of which is more than four thousand million years.

The doctrine of caste is not to be found in the Vedas. It was first embodied in the laws of Manu, a work which contains most minute directions on the subject, and which is certainly of a later date than the Vedas. The Hindoos imagined that by bodily penance and mental abstraction a Brahman might raise himself above the inferior gods; and allusions are often made to obstacles thrown in the way of such penances by the gods, who were jealous of the possible result. As an instance of the extent to which penance was supposed to be carried, one of their greatest saints is represented as lying quite still on the ground so long that his body was almost buried by ant hills, and the birds built their nests in his tangled hair.

The *Jains* did not accept the Vedas; they especially worshipped or honoured a deified saint, Arhat. They were remarkable for their excessive regard for life, taking care not to destroy even the smallest insect.

Somewhere about the fifth century before Christ there appeared a remarkable man, Gautama or Sakya Muni, afterwards called Buddha (literally, the instructed or intelligent). He preached a much purer religion than the prevailing one, and, while admitting the authority of the Vedas, utterly ignored all distinctions of caste, declaring that all men were equal in the sight of God. He also laid great stress on brotherly love and works of charity, and set an example by giving up high rank and great possessions, and going about preaching. His success was so great that at last a great part of India was converted to his opinions. Some time after his death, however, the Brahmins regained their influence, and Buddhism almost ceased to exist in India; it had, however, spread to Ceylon, Thibet, and China, where it continues to flourish to this day, though its followers have long departed from the simplicity and purity of the religion as laid down by its founder.

Fine Arts.

Fine Art Exhibition at Metz.—The Society of the Friends of the Arts of the Moselle have decided that an exhibition shall take place at Metz this year. It is to open on the 1st day of May, and to close on the 20th of the same month, in order that the artists exhibiting there may have the opportunity of sending their works to the Strasburg exhibition, which opens soon afterwards. The Metz exhibition is open to artists of all nations, and works are to be sent in to the Hôtel de Ville of Metz five days at least before the opening day. The society pays the carriage of works for exhibition both ways on the following conditions:

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[*] "Rich" is the Sanscrit for verse—ch at the end of a word becomes k; and k g, before a soft consonant. Veda is from the verb *vid*, to know, English wit, Latin *video*.

—That the distance shall not exceed forty myriamètres, or about eighty leagues; that the packages shall not weigh more than 150 lbs., and that they shall be sent by the most direct route. Letters of advice must also be sent to the secretary of the society, Rue et Hôtel de la Bibliotheque à Metz, containing an exact description of the subject for the catalogue, and, if for sale, the price of the work. Engravers, lithographers, and photographers are invited to send their own productions or reproductions of original works, but the space devoted to these is, if possible, not to exceed a square mètre for each exhibitor. A portion of the funds of the society will be applied to the purchase of works exhibited.

MEETINGS FOR THE ENSUING WEEK.

Mon......Society of Arts, 8. Cantor Lectures. Mr. S. A. Hart, R.A., "On Portrait Painting."
Farmers' Club, 5½. Mr. J. Trask, "On Pauperism and Vagrancy."
Social Science Assoc., 8. Mr. Barrow Rule, "On Scholastic Registration."
Royal Inst., 2. General Monthly Meeting.
R. United Service Inst., 8½. 1. Lieut.-Gen. W. N. Hutchinson, "Recoil Utilised." 2. Lieut. C. P. Stone will exhibit Models illustrative of his new Gun Platform.
Entomological, 8½.
British Architects, 8.
Medical, 8.
London Inst., 6.
Tues ...Civil Engineers, 8.
Pathological, 8.
Anthropological, 8.
Syro-Egyptian, 7½.
Royal Inst., 3. Mr. Westmacott, "Fine Art."
Wed ...Society of Arts, 8. Mr. P. L. Simmonds, "On the Useful Application of Waste Products and Undeveloped Substances."
Pharmaceutical, 8.
R. Society of Literature, 4½.
Obstetrical, 8.
Thur ...Royal, 8½.
Antiquaries, 8½.
Royal Inst., 3. Dr. M. Foster, "On the Involuntary Movements of Animals."
London Inst., 6.
Linnæan, 8.
Chemical, 8.
Royal Society Club, 6.
Society of Fine Arts, 8. Exhibition of the Drawings and Sketches of Thomas Girtin. Paper by Mr. H. Warren.
Fri ......Geologists' Assoc., 7½. Annual Meeting.
Philological, 8¼.
Royal Inst., 8. Mr. J. Fergusson, "Tree and Serpent Worship."
Archæological Inst., 4.
Sat ......Royal Inst., 3. Prof. Odling, "Hydrogen and its Analogues."

Patents.

From Commissioners of Patents' Journal, January 22.

Grants of Provisional Protection.

Anchors, weighing, &c.—50—F. R. A. Glover.
Artificial flowers, &c., manufacturing—39—H. L. Vallée, H. A. Dourlet, and A. M. H. Armand.
Ball valves—95—G. V. Osborne and A. J. Peerless.
Boilers—2882—J. Smith and J. Dewdney.
Boilers, apparatus for feeding—48—H. Davey.
Boxes, &c., manufacturing from paper pulp—83—J. H. Johnson.
Chandeliers, &c.—19—W. A. Biddell and J. Redgrave.
Coal, &c., compressing and solidifying—54—H. G. Fairburn.
Coffee, &c., preparing—56—J. Maugnall.
Copying ink, manufacturing—47—J. F. Cooke.
Cotton, &c., preparing—57—W. Tatham.
Counterpanes, &c., weaving—76—J. Knowles.
Cranes—73—A. Baumann.
Discs having designs formed around their circumferences, moulds for casting—103—L. Hannart.
Elastic rubbers—101—L. Sterne, J. A. Jaques, and J. A. Fanshawe.
Fire-arms—79—J. B. Palmer.
Fire-arms, &c.—88—A. Henry.
Food tablets, concentrated—51—J. H. Johnson.
Gas—45—G. Eveleigh.
Hats, apparatus for manufacturing—3604—H. Swithenbank.
Hydrocarbon oils—32—A. Mason.
Indian corn, treating—84—F. C. Matthews.
Iron and steel—53—J. J. Bodmer.
Iron and steel, &c.—66—J. Henderson.
Jute, &c., treating—52—W. Webster.
Knitting machinery—92—A. V. Newton.
Ladies' umbrella and dress suspender—86—C. McDougall and C. H. Eden.
Lamps—96—H. Aitken.
Lamps for diving operations, &c.—3724—C. F. C. Cretin & J. Watson.
Land, ploughing and cultivating—3736—T. Speir.
Lifting apparatus—61—A. B. Brown.
Looms—74—J. Holding.
Looms—87—W. E. Gedge.
Lubricators—59—J. Daglish.
Milk cans—85—C. Newsome.
Milk, &c., apparatus for cooling—3716—I. E. Woolf.
Motive-power—68—R. Legg.
Motive-power—102—J. Parker.
Napthaline, producing colours from—89—A. P. Price.
Pipes or tubes, uniting the ends of—105—W. R. Lake.
Ploughs—60—R. Wigram.
Portraits, &c., exhibiting—58—T. P. Lucas and G. H. J. Holt.
Railway breaks, &c.—55—C. Kendall.
Railway carriages, &c.—82—C. W. Spong.
Railway chairs, securing wooden keys in—99—P. M. Barnett.
Reaping and mowing machines—3566—T. Culpin.
Reaping and mowing machines—97—S. Jellymann.
Refrigerators—70—M. Saunders and H. Forrest.
Rotary engines, &c.—72—T. Moore.
Saccharine matters, treating—62—W. T. Waite.
Sewing machines, &c., giving motion to—49—F. N. Gisborne.
Shafting and gearing—93—D. L. Coates, Q. Dunlop, and W. Orr.
Ships, &c., defending against injury from projectiles—91—F. Sykes.
Ships, &c., protecting the bottoms of—106—C. P. Coles.
Signalling by compressed air—81—W. H. Penning.
Steam engines—3815—P. Kotzo.
Steam engines, &c , packing for—104—J. Schlösser.
Stench traps—46—J. Mansergh.
Sweatmeats—3978—W. E. Gedge.
Vessels, propelling—77—J. Jordan and J. Jordan, jun.
Water-closets, substitute for—100—J. Steel.
Water meters—90—B. Hunt.
Window blinds, &c.—78—T. A. Warrington.
Wood, treating—3758—A. Matthiessen.
Wool, &c., washing—80—J. Petrie, jun.

Invention with Complete Specification Filed.

Railway carriages, locomotives, &c., wheels for—175—W. R. Lake.

Patents Sealed.

2310. J. Bowron and G. Lunge.
2312. E. T. Hughes.
2325. F. H. Danchell.
2338. J. Greenhalgh.
2349. J. A. Hogg, jun.
2350. G. R. V. Loughton and E. B. Jackson.
2351. J. Higgin.
2365. G. Hodgson, H. Bottomley, and E. Cockroft.
2383. S. C. Lister.
2384. J. Jeffreys.
2387. A. Watkins.
2389. S. C. Lister.
2390. T. H. Roberts and B. C. Cross.
2396. T. Prosser.
2406. P. N. J. Macabies.
2407. B. Sharpe.
2426. C. Geoghegan.
2428. J. Scott.
2430. S. Plimsoll.
2463. A. M. Clark.
3089. T. Heacock.

From Commissioners of Patents' Journal, January 26.

Patents Sealed.

2363. T. Hydes and J. Bennett.
2364. J. Webster.
2366. J. Bullough.
2367. C. A. La Mont.
2368. W. R. Lake.
2369. S. M. Martin & S. A. Varley.
2373. F. Winser.
2374. J. Mabson.
2376. W. R. Lake.
2377. W. R. Lake.
2381. J. Radcliffe.
2386. G. Woodhouse and J. G. McMinnies.
2398. J. and H. A. Gwynne.
2429. H. O. Robinson.
2433. G. N. Shore.
2438. T. Ward.
2449. F. W. Kitson and P. Chalas.
2466. A. V. Newton.
2498. D. Fruwirth & A. Hawkins.
2549. J. Fletcher, sen., J. Fletcher, jun., & W. Fletcher.
2588. F. Braby.
2601. A. V. Newton.
2621. W. R. Lake.
2649. S. Morris.
2763. A. R. Stocker and J. A. Edgley.
2769. J. Stewart & J. Nicholson.
3338. L. Berenger.
3610. W. R. Lake.
3723. W. R. Lake.

Patents on which the Stamp Duty of £50 has been paid.

243. W. Clark.
203. T. Rowatt, jun.
227. E. Hopkins.
238. G. Hinchliffe.
257. F. L. Roux.
321. A. Murray.
425. B. W. Farey.
303. R. Clayton, J. Raper, J. Goulding, & W. Howarth.
229. J. W. Evans.
241. J. Jones.
262. R. A. Brooman.

Patents on which the Stamp Duty of £100 has been Paid.

191. J. Alison.
239. W. E. Newton.
197. D. Edleston and H. Gledhill.